

Notice of Allowability

Application No.

10/620,902

Applicant(s)

KWON ET AL.

Examiner

Art Unit

Wayne Langel

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to the amendment of 11-17-05.

2. The allowed claim(s) is/are 1-3 and 7-13.

3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some* c) None of the:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received:

35. The drawings filed 7-16-03 are approved.
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

(a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) hereto or 2) to Paper No./Mail Date _____.

(b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of
Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application (PTO-152)
6. Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other _____.

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An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Ruggiero on December 8, 2005.

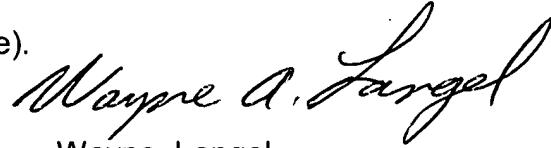
In claim 1, line 5, after "a" the word -- nozzle -- has been inserted. In line 7, "section" (both occurrences) has been changed to -- sectional -- . Also in line 7,, after "said" the word -- nozzle -- has been inserted and "have" has been changed to -- is - - . In line 9, after "velocity" the word -- of -- has been inserted.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne Langel whose telephone number is 571-272-1353. The examiner can normally be reached on Monday through Friday, 8 am - 3:30 pm Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Wayne A. Langel
Primary Examiner
Art Unit 1754

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Serial No. 10/620,902

Amendments to Claims

The following listing of claims will replace all prior versions and listings of claims in the pending application.

Claim Listing

1. (Currently amended) A method for producing nitrogen trifluoride by contacting a fused ammonium fluoride salt with a fluorine gas comprising:

forming a stream of micro droplets of the fused ammonium fluoride salt by a rapid ejection of the fused ammonium fluoride salt in a reactor through a nozzle jet ejector pipe having nozzles, each of said nozzles having a cross-sectional area and a throat having a throat cross sectional area, wherein said throat cross section area to said cross section area have a ratio selected from the group consisting of 5, 25, 5 through 25, and any combinations thereof, and wherein said fused ammonium fluoride salt at said nozzles has an ejecting linear velocity about 2 meters/second to about 30 meters/second;

circulating the fused ammonium fluoride salt from a lower portion to an upper portion of said reactor; and

contacting within said stream of micro droplets the fused ammonium fluoride salt with the fluorine gas, the fluorine gas being sucked in said reactor through a suction pipe for fluorine gas by a negative pressure, said negative pressure being formed around said nozzle due to said rapid ejection of the fused ammonium fluoride salt; and

transferring a portion of the fused ammonium fluoride salt in said reactor to a second jet-loop reactor, said portion being rapidly ejected in said second jet-loop reactor through a second nozzle, said portion being circulated from a lower

portion to an upper portion of said second jet-loop reactor, a stream of micro droplets of said portion being contacted with ammonia gas, said ammonia gas being sucked in said second jet-loop reactor by a negative pressure being formed around said second nozzle due to an ejection of the fused ammonium fluoride salt, wherein said portion and said ammonia gas continuously produce nitrogen trifluoride, continuously reproduce the fused ammonium fluoride salt and recycle the fused ammonium fluoride salt reproduced in said second jet-loop reactor for nitrogen trifluoride production.

2. (Previously presented) The method for producing nitrogen trifluoride according to claim 1, further comprising the step of:

periodically or intermittently isolating the fluorine gas and sucking an ammonia gas in said reactor to reproduce the fused ammonium fluoride salt through a contact of the ammonia gas with said stream, wherein a ratio of HF/NH₃ is maintained at a constant level.

3. (Previously presented) The method for producing nitrogen trifluoride according to claim 1, wherein the fluorine gas is introduced into said reactor through said suction pipe, the fluorine gas being diluted with mixed gases, said mixed gases having NF₃ in said reactor, the fluorine gas being introduced in said reactor by connecting said upper portion with said suction pipe using a tube.

4. through 6. (Canceled).

7. (Previously presented) The method for producing nitrogen trifluoride according to claim 1, wherein an ejecting linear velocity of the fused ammonium fluoride salt at said nozzle is about 5 meters/second through about 20 meters/second.

8. (Original) The method for producing nitrogen trifluoride according to claim 1, wherein the fused ammonium fluoride salt and the fluorine gas are contacted with each other at a temperature of about 100 degrees Celsius through about 150 degrees Celsius.

9. (Original) The method for producing nitrogen trifluoride according to claim 1, wherein the fused ammonium fluoride salt and the fluorine gas are contacted with each other at a temperature of about 110 degrees Celsius through about 130 degrees Celsius.

10. (Original) The method for producing nitrogen trifluoride according to claim 2, wherein the fused ammonium fluoride salt and the ammonia gas are contacted with each other at a temperature of about 70 degrees Celsius through about 150 degrees Celsius.

11. (Currently amended) The method for producing nitrogen trifluoride according to claim [[4]]1, wherein the fused ammonium fluoride salt and the ammonia gas are contacted with each other at a temperature of about 70 degrees Celsius through about 150 degrees Celsius.

12. (Original) The method for producing nitrogen trifluoride according to claim 2, wherein the fused ammonium fluoride salt and the ammonia gas are contacted with each other at a temperature of about 90 degrees Celsius through about 120 degrees Celsius.

13. (Currently amended) The method for producing nitrogen trifluoride according to claim [[4]]1, wherein the fused ammonium fluoride salt and the ammonia gas are contacted with each other at a temperature of about 90 degrees Celsius through about 120 degrees Celsius.